

Chapter IV: Water Resources

The term "Water Resources," as used in this chapter, will refer to fresh water resources, such as lakes and ponds, rivers and streams, wetlands, aquifers and groundwater. Discussion of salt water resources, such as beaches, harbors, and tidal streams, appears in the chapter headed "Marine Resources".

The fresh water resources of the Town of Kennebunkport might best be described as limited but adequate. Ponds and freshwater streams within the town are not large or deep enough for recreational use other than fishing. Most of the residences and commercial establishments within the town are supplied with water from the Kennebunk, Kennebunkport and Wells Water District, which, in turn, derives its water from sources entirely outside the town. The remaining residences which depend upon well water appear to have adequate supplies of satisfactory quality. While this chapter will consider several potential threats to the quality of that water, serious problems do not appear to be imminent.

Because of the need to identify and locate the many ponds, streams, marshes and aquifers discussed in this chapter, considerable use will be made of maps, which may be found at the conclusion of the chapter.

I. INVENTORY

A. WATER COURSES

The interior water resources of the Town consist of the various river systems shown on Map IV-1. This map also shows the boundaries of the watershed for the Batson River.

Maine's Mandatory Shoreland Zoning Act requires that any stream shown on a U.S. Geologic Survey topographic map as the convergence of two perennial streams be protected by special zoning provisions. In March 1994, Kennebunkport amended its Shoreland Zoning to include all areas required. For many stream segments, the town's zoning exceeds the minimum area required by the state. The water bodies protected by Shoreland Zoning, are shown on Map IV-2.

The major water courses in Kennebunkport are the Kennebunk River and the Batson River. The Kennebunk River makes up Kennebunkport's southwesterly boundary. The river and its watershed were the subject of a study conducted jointly by the towns of Arundel, Kennebunk and Kennebunkport in 1986. The report and maps produced are available for reference at the town offices. The highlights of that report are included here:

The watershed of the river drains portions of the towns of Lyman, Arundel, Kennebunk and Kennebunkport. The total area of the watershed is approximately 53 square miles. Of this area, approximately 15 square miles are in Lyman, 16 are in Arundel, 17 are in Kennebunk, and 5 are in Kennebunkport. The length of the main stem of river is 13 miles, from its mouth to the point it splits into Carlisle Brook and Lords Brook in Lyman.

Kennebunk Pond is the origin of the river. The pond is unique in that it has two outlets, which form Carlisle and Lords Brooks respectively. There are no significant tributaries to the river within Kennebunkport.

The river is tidal to a point approximately 5.2 miles from its mouth in the Atlantic Ocean and 0.2 miles upstream from the B & M Railroad bridge. It is tidal for the entire distance that it is in Kennebunkport.

A 1982 study by the Maine Department of Conservation and the National Park Service indicated the Kennebunk River has a composite of natural and recreational resource values with state wide significance.

The Batson River is classified as a minor coastal river, but its watershed comprises a majority of the area of the Town (see Map IV-1). We can trace the tributaries leading into the Batson by the size of the culverts that carry the drainage into the main body of the river. These culverts are listed in Table X-4 (Public Facilities). The river enters Goosefare Bay between Marshall Point and the western end of Goose Rocks Beach. The river is tidal for approximately three-quarters of a mile from its mouth to the dam just downstream of Route 9. Within the Batson River watershed, there are perennial streams which total over 80,000 feet in length. Streams over five feet in width total 16,000 feet. In 1994, the Town Meeting enacted a 250-foot setback that protects the river as far as the Arundel Road by the Chick farm. This area is now in Shoreland Zoning (see Map IV-2). The main threat to the water quality of the river is from farms and homes on the upper reaches of the river.

The Little River and Beaver Pond Brook lie outside the Batson River watershed. The Little River rises from the wetlands by Proctor Road and swings into Biddeford for 7/8 of its route, coming into Kennebunkport under Route 9 near the Biddeford line. It forms the Town boundary from the LaBrie property to the ocean. Beaver Pond Brook also empties into the ocean near here. Water quality testing on these two streams would be the first step in the process of re-opening the Little River areas shellfish flats.

B. GREAT PONDS

There is only one great pond in Kennebunkport, Beaver Pond in the Goose Rocks Beach area. The pond has a surface area of 12 acres. There is no information on its water quality. The pond is located within the watershed of the Little River. The land around the Pond is owned by the Kennebunkport Conservation Trust as permanent open space.

C. WETLANDS

There are a number of wetland areas in the town. There are many definitions of wetlands. This Committee feels secure resting on the United States Department of Agriculture (USDA) definition, as it recently passed a court test on local wetland delineation (Cape Elizabeth v. Davis 89-536): A wetland is characterized by wetland vegetation, standing water most of the year, and very poor drainage. The very poorly drained, flooded soils on Map IV-3 fit the description of wetlands.

Wetlands may be classified as either coastal or freshwater. Wetlands of both types are indicated on Map IV-3. For comparison purposes,

another map showing wetland areas is attached as Map IV-4. The non-wooded freshwater wetlands larger than ten acres in size shown on Map IV-3 are those which are required to be included in the Town's Shoreland Zoning areas.

Most of Kennebunkport's coastal shoreline is rocky, but there are a number of small coastal wetlands scattered along the coast. Coastal wetlands are those which are influenced by tidal action and contain salt tolerant vegetation. Most of the coastal wetlands in Kennebunkport are owned by the Federal Government as part of the Rachel Carson National Wildlife Refuge, as shown in Maps IV-5A, IV-5B, and IV-5C. The largest portions of the coastal wetlands are at the mouths of the Batson River and Turba's Creek.

Of the coastal wetland areas, a significant part is zoned Resource Protection, and most of this area is under the jurisdiction of the Rachel Carson Wildlife Refuge.

Further information on wetlands is provided in Chapter 5.

D. WATER QUALITY IN RIVERS AND STREAMS

The Maine Legislature has classified the rivers of the State for purposes of regulating water quality. The classification is an indication of the lowest water quality the Department of Environmental Protection (DEP) may allow. It is not an indication of current water quality. The classification designated for the Kennebunk River has changed several times in the last decade from C to B2 to B.

Water quality testing of the Kennebunk River was done by the DEP until 1983. In 1985 and 1986 a private group, Friends of the Kennebunk River, performed some additional testing. There were five stations for the water quality testing: Route 9 bridge, Durrell's Bridge, Route One, Downing Road, and Days Mills.

In general the water quality testing done between 1980 and 1986 indicated the river attained the standards for a Class B water body. Tests for dissolved oxygen above the standards of 75% of saturation in freshwater and 85% of saturation in saltwater were achieved in 102 of 105 tests during the six year period. Tests for bacteria met the standard in 55 of 74 tests. The acidity of the water was within the desired pH range of 6.0 to 8.0 in all tests. Some tests revealed a high level of nitrogen, possibly reflecting contamination from dairy farm operations situated north of Kennebunkport.

The DEP tested the river again only at the Route One location in the early fall of 1991. Bacterial contamination climbs after rainfalls, and Hurricane Bob had occurred in August, 1991. When the river was still at flood stage following the hurricane, E.Coli bacteria levels rose to over 6,000 colonies per 100 ml. of water. The DEP's report indicates the river did not meet Class B status, but attained Class C standards. The DEP surmised that storm water runoff was the reason for the river not meeting its usual classification.

Though there is no empirical data from testing, water quality for the smaller interior waterways appears satisfactory. The primary indicator of this is the water quality within the Rachel Carson Wildlife Refuge. An August 1988 draft environmental assessment by the Refuge estimated that half of the average annual precipitation falling within the drainage basins leading to the Refuge turns into runoff settling in the upper reaches of the marsh. The tendency is to decrease water quality through increased turbidity and transport of pollutants. Nevertheless, managers at the refuge, when asked, stated that water quality appears good. In 1988, the Town adopted a Critical Edge buffer around the Refuge. This may be helping to avoid degradation.

Information from the Department of Marine Resources reflects that Kennebunkport suffers from a common problem in southern Maine coastal areas: high fecal coliform levels, probably due to failing septic systems and poorly maintained overboard discharge systems.

The recently completed project to provide sewer lines to the Goose Rocks Beach area (where most OD's were located) should help correct the coastal water pollution problem in the Batson River estuary. With the completion of the sewer line, many dwellings previously served by overboard discharges or subsurface systems have been connected to the sewer.

Nevertheless, there remain 15 licensed overboard discharge systems in the town. Two of these are on Cape Arundel (one is not built); two on Windemere Lane; and seven (two not built) in Skipper Joe's/Marshall Point area. Three of the units in the Marshall Point area may be able to tie into the new sewer line.

E. GROUND WATER RESOURCES

According to the 1990 Census, wells were the source of water for over 650 housing units in Kennebunkport, housing about 30% of the total population. The maintenance of the quality and availability of ground water is therefore an important issue for a large number of residents.

Areas which are able to provide a usable amount of ground water are known as "aquifers." Because of the predominant bedrock and soil conditions in Maine, virtually the entire state can be called an aquifer.

There are two different types of aquifers. When usable amounts of ground water can be removed from the loose unconsolidated material which sits on top of the bedrock, the aquifer is known as a surficial aquifer. When there are sufficient cracks and fissures in the underlying bedrock material to collect usable amounts of ground water, the aquifer is called a bedrock aquifer.

Each type of aquifer has the potential to yield differing amounts of ground water. The amount of ground water available from a surficial aquifer depends on the grain size of the surficial material. Surficial deposits made up of marine clays or tightly packed glacial tills have small grain sizes and, therefore, there is relatively little pore space to store water. In addition, ground water moves slowly through these tight grained deposits, so a well has a limited yield. On the other hand, sandy or gravelly deposits such as are found in glacial outwash material have relatively large pore spaces between grains and water can move relatively quickly. Wells in sand and gravel deposit can therefore result in high yields of ground water.

The yield from a bedrock well will depend on the size and number of cracks or fissures the well intercepts as it is drilled. Where there are a large number of fissures, such as near a fault line, bedrock wells are able to produce high yields as well.

Much of Kennebunkport is underlain by fractured granitic and basaltic bedrock. The bedrock in the western part of the town is metamorphic in origin. Due to the expense involved, no broad based mapping of high yield bedrock aquifers is available.

On the other hand, the Maine Geologic Survey has mapped the high yield sand and gravel aquifers throughout the state. These maps show those areas where ground water yields in excess of 10 gallons per minute can be expected.

The importance of mapping high yield aquifers is that they are potentially desirable locations for public drinking water supplies. Survey maps show two such areas in Kennebunkport, both in the north part of town. Both of these areas are indicated as likely to yield between 10 and 50 gallons per minute. The first is near the intersection of Guinea Road and Whitten Hill Road. (This was formerly the site of the municipal landfill for the Town of Arundel, and hence the quality of the water should be tested.) The second is to the west of this location, crossing over the Town line into Biddeford.

Because Kennebunkport's public drinking water supply is located outside of the town (Branch Brook and the Saco River), it is relatively unlikely in the near future that it would be found desirable to develop any of the mapped high yield aquifers as a public supply. Aquifers with lower potential are shown on Map IV-6.

Areas which are not high yield aquifers will still yield enough ground water to meet the demands of individual households or small developments. According to Peck Laboratories, which is considered the leading tester of well water in this area, tests of ground water from Kennebunkport so far indicate no widespread threats of pollution. When impurities have been found, they usually have been:

1. Bacteria from surface sources, such as animal or vegetable matter, which leach through the soil in the spring when the water table is unusually high;
2. Arsenic, which occasionally poisons a well originating in bedrock. Such instances are rare, and the only cure is to drill another well in a new location.

Ethical considerations would prevent the Laboratory from reporting pollution, which might become widespread, such as petroleum from a leaking storage tank. Nevertheless, it is the Laboratory's experience that in such a case, the owner of the well can be relied upon to spread the alarm.

In a few neighborhoods along the shore, such as Windemere Place, well water may be unsatisfactory for drinking because of the intrusion of salt water. The basic problem here is that the water table on which the wells draw has fallen below the level of the tide, and there is no known method by which the Town can correct the situation. The only remedy is to treat the water after it is pumped, such as by reverse osmosis filtration.

F. SOURCES OF POLLUTION

1. Point Discharge Sources

The town's waste water treatment plant outfall pipe is located in the Kennebunk River. Since the discharge from this plant is continuously monitored, and must meet strict standards, it is not likely to become a source of pollution.

Storm sewers can also be considered as point sources of pollution where they run into the rivers or the ocean. At this time, there are no legal limitations on sewers of this kind. Although such sewers occasionally carry fertilizer from lawns and gardens, and oil and grease from roads, they are not believed to be a significant source of pollution in Kennebunkport.

There are still 15 licensed overboard discharge systems in Kennebunkport, all of which discharge into the ocean. These are discussed in the chapter headed "Marine Resources."

2. Non-Point Discharge Sources

Non-point sources of pollution are those which do not enter a water body from a pipe. Non-point source pollution is usually associated with storm water runoff from fields, construction sites or roadways. Other sources of non-point source pollution can include septic systems and farming operations. There are three major concerns regarding non-point sources of pollution. These are sedimentation from soil erosion, nutrients, and bacteria.

In Kennebunkport, the major non-point sources appear to be runoff from roads, parking lots, and other impermeable surfaces and runoff caused by development. For example, erosion and sedimentation have apparently affected small tidal waters behind North and South Maine Streets, causing those areas to fill in. Mill Pond, which appears to be filling in with sediment, may be a typical case in point. Properly administered erosion and sedimentation control standards can prevent most of the concern from construction and development activities.

Any dump is a potential source of pollution, because toxic materials may leach down into subsurface aquifers. This possibility remains a threat even after the dump has been closed, as the dump in Kennebunkport has. Test wells were installed around the dump site in Kennebunkport when it was closed, and water from these wells is analyzed at least once annually by the Maine DEP. So far, no pollution has been detected.

G. EXISTING WATER QUALITY PROTECTION

Kennebunkport's Land Use Ordinance provides standards to prevent water quality degradation. In March, 1993, the Town revised its Shoreland Zoning requirements to comply with the 1990 State Minimum Guidelines. As part of those revisions, specific erosion and sedimentation control standards were adopted with the requirement for a written control plan to be filed with the Code Enforcement Officer whenever earth is disturbed in the Shoreland Zone. In addition to the erosion and sedimentation control standards, setback and buffering provisions along the shoreline and edge of wetlands are prescribed by the Shoreland Zoning and Critical Edge standards.

Other parts of the ordinance place restriction on the direct or indirect discharge of materials into surface or ground waters. The Site Plan Review process for most commercial uses and other situations contains standards regarding erosion control and storm water management.

H. POSSIBLE THREATS TO WATER QUALITY

The most common threat to water quality in Kennebunkport is the large number of subsurface wastewater disposal systems. Improperly sited or failing septic systems can lead to both ground water and surface water contamination.

Another potential threat to the quality of ground water is leakage from petroleum storage tanks. According to a list from the Maine

Department of Environmental Protection, dated January 1993, there are 40 licensed underground tanks storing petroleum products in Kennebunkport. (It is possible that some of these tanks have been removed since the date the list was prepared.) Most of these are used to store gasoline or heating oil. Nine of the tanks were installed more than 20 years ago and therefore present a greater threat of leakage. Fifteen of the tanks were installed in 1985 or later and therefore reflect the newer regulations designed to protect ground water quality.

II. ANALYSIS AND CONCLUSIONS

A. QUALITY OF STREAMS AND RIVERS

Fresh water streams and rivers within the town appear, under normal circumstances, to meet satisfactory water quality standards. Furthermore, these streams are so small that they find little recreational use except for fishing. Hence at this point, there seems to be no need for any remedial action on the part of the town.

B. AVAILABILITY OF GROUND WATER

While the majority of the residents of the town use water derived from out-of-town sources, about 35% of the residents rely on water derived from their own wells. To the best of this Committee's knowledge, the quantity of water available from these wells has been adequate for these people's needs.

C. QUALITY OF GROUND WATER

With some rare and/or temporary exceptions, the quality of ground water derived from wells within the town has been good. Therefore, ground water quality does not pose a problem for the town, at least at the present time.

D. POTENTIAL THREATS TO WATER QUALITY

The principal potential sources of ground water pollution in Kennebunkport, as in any other town, are leakage from rusted petroleum storage tanks, seepage from septic fields, or leaching from the now-closed dump or other refuse areas. While there is no indication that danger from these sources is imminent, the town should remain sensitive to any evidence that such a threat has arisen.

III. IMPLEMENTATION

STATE GOALS AND GUIDELINES: PROTECT WATER RESOURCES BY ENSURING QUALITY OF EACH WATER BODY

TOWN GOAL 1: TO HAVE ALL SURFACE WATERS WITHIN THE TOWN MEET OR EXCEED THE STANDARDS FOR THEIR DESIGNATED WATER QUALITY.

POLICY 1: Minimize the introduction of contaminants to water bodies.

Strategy 1: Avoid sedimentation of water bodies from erosion and contaminants from construction by the adoption and enforcement of the Department of Environmental Protection's Best Management Practices.

Responsible Party: Growth Planning Committee, Planning Board, Code Enforcement Officer

Recommended Time Frame: Within one year of adoption of plan.

Strategy 2: Educate the public about the hazards of chemical contamination of water bodies.

Responsible Party: Conservation Commission, Growth Planning Committee

Recommended Time Frame: Within one year of adoption of plan.

Strategy 3: Continue municipal highway department road construction and maintenance techniques to avoid erosion of road shoulders and drainage structures.

Responsible Party: Conservation Commission, Road Commissioner

Recommended Time Frame: Ongoing

TOWN GOAL 2: PROTECT THE BATSON RIVER FROM REMOTE SOURCES OF POLLUTION

POLICY 1: Land use regulations for the watershed must take into account the predominance of fractured bedrock which can easily conduct contamination of ground water to surface waters.

Strategy 1: Determine the area of vulnerability.

Responsible Party: Conservation Commission, Growth Planning Committee

Recommended Time Frame: Within two years of adoption of plan.

Strategy 2: Examine uses which create a substantial risk of pollution. Suggest appropriate land use regulations as needed.

Responsible Party: Growth Planning Committee, Planning Board, Conservation Commission

Recommended Time Frame: Within two years of adoption of plan.

TOWN GOAL 3: PROTECT GROUND WATER QUALITY

POLICY 1: Assure subsurface wastewater disposal systems are sited and constructed in a manner to avoid ground water contamination

Strategy 1: The State Subsurface Waste Water Disposal Rules have been amended to allow systems to be installed on sites with 13 inch depth to bedrock or water table. Continue the Towns local provisions maintaining the 15 inch depth requirement until completion

of appropriate planning studies which will define maximum residential density to maintain ground water quality.

Responsible Party: Growth Planning Committee, Enforcement Officer

Recommended Time Frame: Ongoing

Strategy 2: Amend Land Use Ordinance to require a minimum of two test pits as part of the site evaluation to assure adequate site conditions for the entire disposal area.

Responsible Party: Growth Planning Committee, Planning Board

Recommended Time Frame: Within one year of adoption of plan

POLICY 2: Monitor ground water quality on a continuing basis.

Strategy 1: Request property owners or residents to provide the results of any water well testing that is done to establish a baseline of information and track changes in water quality.

Responsible Party: Growth Planning Committee, Code Enforcement Officer

Recommended Time Frame: Within six months of passage of plan